PATENT

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Applicant:	Kang Soo SEO et al.
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Title:	RECORDING MEDIUM HAVING DATA STRUCTURE FOR MANAGING REPRODUCTION DURATION OF STILL PICTURES RECORDED THEREON AND RECORDING AND REPRODUCING METHODS AND APPARATUSES
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STATEMENT OF ACCURATE TRANSLATION

Sir:

Attached is a certificate of verification confirming that the attached English specification and claims are a complete English translation of Korean Patent Application No. 10-2003-0007894.

Respectfully submitted,

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CERTIFICATE OF VERIFICATION

I, Soo Jin KIM of 648-23 Yeoksam-dong, Gangnam-gu, Seoul, Republic of Korea state that the attached document is a true and complete translation to the best of my knowledge of the Korean-English language and that the writings contained in the following pages are correct English translation of the specification and claims of the Korean Patent Application No. 10-2003-0007894.

Dated this 26th day of October , 2007.

Signature of translator: _____

Soo Jin KIM

KOREAN INTELLECTUAL PROPERTY OFFICE

This is to certify that the following application annexed hereto is a true copy from the records of the Korean Industrial Property Office.

Application Number: *KR* 10-2003-0007894

Date of Application: FEB. 27. 2003

Applicant(s): LG Electronics Inc.

COMMISIONER

[ABSTRACT OF DISCLOSURE]

[ABSRTACT]

The present invention relates to a method for managing a still image of high density optical disc such like a play only Blu-ray disc (BD-ROM). And partially, the present invention records a still image for playing a slide show which is separated from a video, audio and makes mutual related playable still images grouped and manages respectively the above images by unite.

Besides, a navigation information for pointing a play order of the above grouped unites records and manages within a clip information corresponding to the above still image files. For the reason, the present invention is very useful to play effetely various types still image data, for example, JPEG image data, a graphic image data, subtitle data, contraction movie data.

[TYPICAL DRAWINGS]

FIG 8

[INDEX WORD]

Play only Blu-ray disc (BD-ROM), still image file, still picture unit, still picture map, slide show, clip information.

[SPECIFICATION]

[TITLE OF THE INVENTION]

Method for managing a still image of high density optical disc

[BRIF OF THE INVENTION]

FIG 1 illustrates a method for controlling a recording unit (VOBU) still of DVD-video.

FIG 2 illustrates a method for controlling a cell still of DVD-video.

FIG 3 illustrates a method for controlling a recording unit (VOBU) still of DVD-VR

FIG 4 to FIG 6 illustrates a method for controlling an audio still video unit (ASVU) of DVD-audio.

FIG 7 illustrates a method for controlling an audio still video unit (ASVU) of DVD-AR.

FIG 8 illustrates a method for managing a still image of high density optical disc according to the present invention.

FIG 9 illustrates schematically a construction of optical disc device according to the present invention.

FIG 10 illustrates an embodiment which a display duration information is recorded additionally into a still

picture map according to the present invention.

FIG 11 illustrates a station which a still image files are related to a plural of still picture maps according to the present invention.

FIG 12 illustrates an embodiment which display duration information is recorded into a play list or a play item according to the present invention.

FIG 13 illustrates a situation which a graphic data contained in a JPEG file is recorded according to the present invention.

FIG 14 illustrates a situation which a graphic image data and various language subtitle data are recorded to the present invention.

FIG 15 illustrates a situation which a display time controlling information contained within PES packets is recorded into according to the present invention.

*** Description of main part in drawings***

10: optical disc **11: optical pickup**

12: VDP system **13: D/A converter**

[DETAIL DESCRIPTION OF THE INVENTION]

[OBJECT OF THE INVENTION]

[FIELD OF THE INVENTION AND BACKGOUND OF THE RELATED ART]

The present invention is related to a method for managing a still image of high density optical disc.

Generally, an optical disc such like a DVD which is able to record and store a high-definition video data and high sound quality during long hours is developed and used.

The above DVD in contained a DVD-VIDEO, DVD-VR, DVD-AUDIO.

Meanwhile, in order to read and play a data recorded in the above DVD, the optical disc device commits a still operation outputting a stop picture in a limitless or in a limit by using navigation information recorded in the above DVD.

That is described as followings

FIG 1 illustrates a method for controlling a recording unit (VOBU) still of DVD-video. In the above method, after a sequence end code for a still operation is recorded in the end of a video data contained into a random recording unit, it maintains a video still station by checking the above.

Besides, a stat time information (VOBU_S_PTM) for playing and outputting a the above recording unit, a end time information (VOBU_E_PTM), and the video end time information (VOBU_SE_E_PTM) for still operation are record to PCI (presentation control information) of navigation pack (NV_PCK) recorded in the front of above recording

unit.

And if the above video ending time information is checked, the optical disc device outputs the video data recorded in the end of the corresponding recording unit as the stop image.

At that time, the limitless still station is maintained.

On the other hand, described as FIG 2, the method for controlling cell still of DVD-VIDEO is to output the last picture data of the last recording unit (VOBU) contained a random cell by referencing cell still time defined from cell playback information (C_PBI).

During that time, the video still station outputting the above picture data as the stop picture is maintained.

At that time, the optical disc device is able to maintain the above video still station in a limit or in a limitless during an allotted time. But the above last picture data may contain the Sequence End Code for a still operation or not.

While the still image coding type of the above DVD-VIDEO is not related to I-picture, P-picture, and B-picture and is controlled by MPEG decoder or Mincom depending on the above Sequence End Code and navigation information.

Also, the above still operation is used to menu

background screen or slide show.

FIG 3 illustrates a method for controlling a recording unit (VOBU) still of DVD-VR.

In the above method, after defining one still picture containing Sequence End Code and an audio related to the still picture as recording unit (VOB), those is used. The above still picture is encoded in the manner of MPEG and then is recorded and managed differently with Movie data.

Meanwhile, a plurality of recording unit is defined as VOG (GROUP OF VOBs), and each of VOG manages still image recording content by having VOB entry and A/V Attribute information.

In addition, by playing movie and stop picture with those ruing together, the optical disc device can play still picture together with movie.

FIG 4 illustrates a method for controlling an audio still video unit (ASVU) of DVD-audio.

In the above method, the slide show performs by ASVU unit including a plurality of audio still video (ASV). And one audio still video contains sequence header, GOP header, I-picture and GOP having sequence end code.

On the other hand, the above audio still video (ASV) is recorded in an area different from area recorded to movie data.

Also, one of ASVU contains a plurality of ASV having

identical attribute and is controlled by ASVU unit.

And the navigation information such like program number, display timing, effect mode is recorded and managed by ASV unit.

Also, the navigation information such like video attribute display mode (i.e. slide show, browsable), display order (i.e. sequential random/shuffle), and display timing is recorded and managed.

Accordingly, the optical disc stores data read by ASVU unit and then performs sequential slide show depending on display order and display timing of each ASVs described as FIG 4 or performs random/shuffle slide show described as FIG 5.

Furthermore, described as FIG 6, it performs browsable show. For example, if next key is inputted on displaying first ASV, third ASV is displayed automatically after second ASV is displayed. While if previous key is inputted on displaying third ASV, a certain browsable slide show displaying the previous second ASV is performed and another ASV can be displayed only if the user key is inputted.

FIG 7 illustrates a method for controlling an audio still video unit (ASVU) of DVD-AR.

In the above method, like DVD-VIDEO, the slide show is performed by ASVU unit containing a plurality of audio

still video (ASV).

At that time, that has JPEG stop image and still image format consisting of sequence end code.

Meanwhile, ASVU corresponds to each of program unit and the navigation information such like display mode, display effect, duration is recorded and managed by ASVU unit.

Also, video attribute, recording time, ASV start address information is recorded and managed by ASVU unit.

Therefore, the optical disc device is performed a function as same as the browsable slide show of the above DVD-audio' one.

the method for playing the above ASVU identities the method for playing DVD-AUDIO. And the display starts after check out all ASVU into memory.

At that time, still screen is outputted as form in an album picture or a song picture.

In the meantime, recently, the standard size of high density optical disc has high recording density higher than DVD dose not be defined and the efficient still image management method dose not be ready to perform the best suited slide show playing operation.

[TECHNICAL SOLUTION OF THE INVNETION]

The present invention id derived regarding to the

above situation. So, high density optical disc Such like only-play blu lay disc (BD-ROM) is to provide a method of managing still image of high density optical disc in order to perform the slide show playing operation enough for high density optical disc.

[DETAIL OF THE INVENTION]

To achieve the above object, the method of managing still image of high density optical disc according to the present invention contains recording the still images for playing the slide show by distinguishing still image from moving picture and audio; grouping still image files played and outputted among the above divided still images; recording and managing the navigation information for appointing play order about grouped unit within the clip information corresponding to the above sill image files.

Also, the high density optical disc according to the present invention contains recording the still images for playing slide show by distinguishing the sill image files from the movie picture and audio; recording and managing the navigation information for appointing play order about grouped unit within the clip information corresponding to the above sill image files.

Hereafter, the embodiment of the method for managing still image of the high density optical disc according to

the present invention is described as the attached figures.

First, the method for managing still image of the high density optical disc according to the present invention as described as FIG 8 is to record the still image such like JPEG image data, graphic image data, and the subtitle data by being distinguished form movie picture and audio data.

And if slide show playing operation is performed , the displayed still image files is managed by grouping the still picture unit and the sill picture map information for pointing plating order of the above still picture unit is recorded and managed as the clip information within the clip recording and managing the above still image files.

While, described as FIG 8, many still image files grouped as the one still picture unit having different extension according to the data original property is recorded and managed as the same file name.

For example, JPEG image data, graphic image data, and the subtitle data is recorded and managed with the same file name and the different extension such like, "01001.JPG", "01001.GRP", "01001.SUT" on the above one still picture unit.

Additionally, the file name of the sill image files including in each still picture units is recorded and managed in a form of list in order to pointing slide show

playing order on the above still picture map (SP_map).

For example, many still pictures unites recorded and managed in a sequence is recoded and managed by the file names in order to be playable in a random order.

And the above still picture map is related to play item of playlist, navigation information for controlling and playing the above still image files.

And the above subplay item of playlist like MPEG2 transport stream can be related to multi-recorded audio stream.

Accordingly, described as FIG 9, the optical disc device containing optical pickup 11, VDP (video, disc play) system 12, and D/A transfer 13 references the above still picture map (SP_map) related with the above playitem of playlist.

And the above VDP (video, disc play) system 12 performs a set of slide show playing operation after reading out the still image files corresponding to the file names order stored in a form of list to the above still picture map (SP_map).

Meanwile, described as FIG 10, on the above still picture map (SP_map), the respective still image of display time controlling information such like display duration time additionally is records to the file names order stored in a form of list.

Also, on the above still picture unit, JPEG image data, graphic image data, subtitle data, and thumbnail picture image are recorded more.

And described as FIG 11, the above many sill image files can be double-related to respective still picture map recorded in a plurality of clip information.

For example, the file names order stored in a form of list on the first still picture map (SP-map #1) and the file names order stored in a form of list on the second still picture map (SP-map #1) are able to record differently.

So, the same sill image files can play display as different playing order slide show.

at this time, the above still image files of display time controlling information is recorded being included the corresponding still picture map , respective related playlistm and playitem.

For example, , the display duration information time information of respective still images is recorded and managed by using the duration information of playlistmark assigned within the above playlist. Or the display duration information time information is recorded and managed by assigning additionally the duration information field to the above playitem.

And if the display duration information time of

respective still images is different, the corresponding of the display duration information time is recorded and managed in a form of table.

Or if the display duration information time of respective still images is same, the display duration information time is recorded and managed by recording with 1 bite.

At this time the classifying flag,"share flag" is recorded and managed additionally in order to distinguish which the field is valid among the above two duration information field.

While, described as FIG 13, one still image recording to JPEG image data such as the header information area of '01001.JPG' contains graphic image data, application mark, application mark length, and BD-Rom ideal code.

In this case, multi-step file construction procedure should exist for containing at all to one JPEG file after JPEG image data and graphic data are manufactured independently.

And the graphic image data stream is recorded to one graphic file (*.GRP) by one graphic unit.

For example, the above graphic image data stream is recorded in type of packetized elementary stream PES or recorded only by PES packet payload.

Also, the above graphic file is recorded the

information such like one graphic unit and many lingual subtitle data stream (subtitle #1~#k) as respective lingual units.

For instance, the above graphic unit and each lingual units is recorded multiply as privet packet stream format recorded to one graphic file in a sequence or recorded multiply as transport packet (TP) according to MPEG2 transport stream (TS).

And the subtitle data recorded as the above, the display time is decided by presentation time stamp PTS and decoding time stamp DTS including to PES packet header.

For instance, if the brawable slide show operation deciding that the display time is changeable by user inputting key, the above PTS time information is no meaning. So it is set up as 'PTS=oxooooooooo'.

And in the above PES packet payload, displayable cut in time information and cut out time information are recorded to the subtitle data. The above cut in time and cut out time, which is the information is regarded as the displayable time by graphic image. And it is recorded as standard of The PTS time information.

It will be apparent to those skilled in the art that various modifications and variations can be made in the present invention without departing from the spirit or scope of the invention. Thus, it is intended that the

present invention cover the modifications and variations of this invention provided they come within the scope of the appended

[EFFECT OF THE INVENTION]

the method of managing still image of high density optical disc according to the present invention contains recording the still images for playing the slide show by distinguishing still image from moving picture and audio; grouping still image files played and outputted among the above divided still images; recording and managing the navigation information for appointing play order about grouped unit within the clip information corresponding to the above sill image files.

Also, the high density optical disc according to the present invention contains recording the still images for playing slide show by distinguishing the sill image files from the movie picture and audio; recording and managing the navigation information for appointing play order about grouped unit within the clip information corresponding to the above sill image files.

What is claimed:

1. A method of managing still image of high density optical disc according to the present invention contains ;

Recording many still image for playing slide show as another still image files distinguished from movie picture and audio;

managing the sill image files grouped among the above distinguished recorded still image files by unit;

managing and recording the navigation information for pointing the playing order of the grouped unites within the clip information corresponding to the above still image files.

2. In claim 1, a method of managing still image of high density optical disc according to the present invention wherein;

If the slide show is performed, each of units contains one among the sill image files of the mutual related playable JPEG image data or the still image file of the graphic image data; and the still image file of the subtitle data.

3. In claim 2, a method of managing still image of high density optical disc according to the present invention wherein;

The sill image files of the mutual related playable JPEG image data or the still image file of the graphic image data; and the still image file of the subtitle data are recorded and managed by same file name and different extension.

4. In claim 1, a method of managing still image of high density optical disc according to the present invention wherein;

The still picture map is related to play item of playlist, navigation information for controlling and playing the above still image files.

5. In claim 4, a method of managing still image of high density optical disc according to the present invention wherein;

the file name of the sill image files including in each still picture units is recorded and managed in a form of list in order to pointing slide show playing order on the above still picture map (SP_map)

6. In claim 4, a method of managing still image of high density optical disc according to the present invention wherein;

The file name of the still image files included in

the respective units grouped and the display time control information of respective units the above still picture map (SP_map) information.

7. In claim 1, a method of managing still image of high density optical disc according to the present invention wherein;

the display time control information of respective units grouped is recorded in the playlist information related to the above navigation or play item information.

8. In claim 7, a method of managing still image of high density optical disc according to the present invention wherein;

The different display time controlling information of each unit is recorded in a form of list or recorded in a set of recording size On the duration information field in play list mark of the above playing list information.

9. In claim 7, a method of managing still image of high density optical disc according to the present invention wherein;

the different display time controlling information field assigned additionally in the above play item information is recorded in a form of list or recorded in a

set of recording size On the duration information field in play list mark of the above playing list information.

10. In claim 7 or claim 8, a method of managing still image of high density optical disc according to the present invention wherein;

the classifying flag,"share flag" is recorded and managed additionally in order to distinguish which the field is valid among the above duration information recorded respectively in a form of list and the display information recorded by the above set of recording size.

11. In claim 1, a method of managing still image of high density optical disc according to the present invention wherein;

the navigation information for appointing play order about grouped unit within the clip information corresponding to the above sill image files is recorded and managed.

12. In claim 2, a method of managing still image of high density optical disc according to the present invention wherein;

Among the above JPEG image data still image files, one more graphic image data is recorded in the deader

information recording area.

13. In claim 2, a method of managing still image of high density optical disc according to the present invention wherein;

On the above still picture unit, JPEG image data, graphic image data, subtitle data, and thumbnail picture image are recorded more.

14. In claim 1, a method of managing still image of high density optical disc according to the present invention wherein;

the high density optical disc is play-only blu-lay disc and the above still image data grouped by the respective unit like MPEG2 transport stream can be related to multi-recorded audio stream.

15. In claim 1, a method of managing still image of high density optical disc according to the present invention wherein;

the high density optical disc is play-only blu-lay disc and the above still image data grouped by the respective unit like privet packet corresponding the one image data can be related to multi-recording.

16. In claim 1, a method of managing still image of high density optical disc according to the present invention wherein;

the display time is decided by presentation time stamp PTS and decoding time stamp DTS including to PES packet header.

17 the high density optical disc according to the present invention wherein;

Recording many still image for playing slide show as another still image files distinguished from movie picture and audio;

managing the sill image files grouped among the above distinguished recorded still image files by unit;

managing and recording the navigation information for pointing the playing order of the grouped unites within the clip information corresponding to the above still image files

18. In claim 17, the high density optical disc according to the present invention wherein;

On the above still picture unit, JPEG image data, graphic image data, subtitle data, and thumbnail picture image are recorded more.

19. In claim 17, the high density optical disc

according to the present invention wherein;

the file name of the still image files included in respective unit is recorded in a form of list according to slide show playing order to navigation information.